REMARKS

Claims 1, 4-10, 12-14 were pending at the time of examination. Claim 1 has been amended and claim 6 has been canceled. The Applicant is <u>not</u> conceding that the subject matter encompassed by claims 1 and 6 prior to this amendment is not patentable over the art cited by the Examiner. Claims 1 and 6 were amended and canceled, respectively, in this amendment solely to facilitate expeditious prosecution of the remaining claims. The Applicant respectfully reserves the right to pursue additional claims, including the subject matter encompassed by claims 1 and 6 as presented prior to this amendment, in one or more continuing applications. The Applicant respectfully requests reconsideration based on the foregoing amendments and these remarks.

Claim Rejections – 35 U.S.C. § 112

Claims 1, 4-10 and 12-14 were rejected under 35 U.S.C § 112, first paragraph, as not reasonably providing enablement for non-iterative clustering. The Applicant has amended claim 1 to remove the non-iterative language and to further clarify that there are two (single) passes through the set of records, followed by an iterative refining step that serves to reduce the number of calculated clusters.

Again, to be fully clear about this, the <u>clustering</u> portion of claim 1 is <u>not iterative</u>. It is the <u>refining</u> of the already <u>determined clusters</u> that is an <u>iterative</u> step. Therefore, as a whole, the method describe in claim 1 can neither be characterized as iterative or non-iterative, which is why the non-iterative limitation was removed from claim 1.

All the steps of claim 1 are fully described and enabled in the specification, and it is thus respectfully requested that the rejection under 35 U.S.C § 112, first paragraph, be withdrawn.

Claim Rejections – 35 U.S.C. § 103

The rejection of claims 1, 4-10, 12-14 under 35 U.S.C § 103(a) over U.S. Patent No. 6,012,058 to Fayyad et al. (hereinafter "Fayyad") in view of U.S. Patent No. 6,636,862 to Lundahl et al. (hereinafter "Lundahl") was maintained in this Office Action. The Applicant again respectfully traverses this rejection.

As can be seen in claim 1, a first (single) pass of the set of records is performed in order to determine characteristic values for each attribute in the set of attributes. That is, all the attribute values for the set of records are evaluated. This is not done in Fayyad. Fayyad performs multiple iterations across the records, and "on any given iteration of the invention" the

existing data samples are partitioned into a discard set (DS), a compression set (CS), and a retained set (RS), where only the retained set is kept in memory and the other two are only kept in the form of "representative sufficient statistics" (col. 2, lines 62-67). According to Fayyad, this is done in the interest of saving "valuable resources."

Next, as can be seen in claim 1, a second (single) pass across the set of records is performed, in which deviations from the characteristic values are determined and the attributes are sorted based on these deviations to provide a key that indicates which attributes in the set of attributes deviate the most from the respective characteristic values. This <u>key</u> of sorted deviations is subsequently used to combine the set of records into a plurality of clusters. That is, once the key has been determined, the characteristic values are irrelevant, as all subsequent operations are performed using the key. These steps are also not performed in Fayyad.

Fayyad does not use a key as described in claim 1. Instead, Fayyad uses <u>conventional K-means clustering</u> (see, for example, col. 6, lines 6-63), applied <u>only</u> to the retained set (RS) – not all the records, as specified in claim 1. Furthermore, in the K-means algorithm, the distance is iteratively determined from a centroid, which can be considered a "moving target" as the <u>position of the centroid changes in every iteration</u> (see, for example, col 3, lines 14-18, which discusses the determination of an "updated mean"). In the Applicant's method, as claimed, the deviations are determined with respect to the <u>characteristic value</u>, which is <u>static</u> for a given attribute and a given set of records. In fact, the whole point with the Applicant's invention is to overcome the drawbacks with conventional K-means clustering, since it is so computationally expensive, as stated in the background section of the specification.

Finally, claim 1 teaches a refining step for the clusters that result from performing the first and second passes across the set of records. The Examiner correctly acknowledges that this is not taught by Fayyad, and relies on Lundahl as disclosing this feature.

Lundahl is directed to a method and system for the dynamic analysis of data represented in distinct matrices (Abstract). Lundahl uses Kohonen's self-organizing feature map (SOFM), which requires a neural network to work, which is not necessary for the "identifying" step in claim 1. In fact, the Kohonen algorithm is also exemplified in the background section as a computationally expensive algorithm whose deficiencies are overcome using the Applicant's invention, as claimed. The section of Lundahl cited to render the "searching" step of claim 1 obvious pertains to optimizing an index of a search sample by substituting the index with a sample from raw data, when appropriate. No such substitution is made in the Applicant's invention. The refinement of the clusters in the Applicant's invention serves to distribute certain clusters into other clusters – not to make any kind of substitution. Furthermore, Lundahl does

not disclose any key to be used in this process, as required by claim 1. There are a plethora of further differences between Lundahl and the subject matter claimed in claim 1, as amended, but the Applicant does not deem them necessary to discuss, as the above representative differences ought to make the differences between Lundahl and the Applicant's invention sufficiently clear.

In conclusion, even if one were to combine Fayyad and Lundahl, the combination would not remedy the deficiencies discussed above. Consequently, it is respectfully submitted that claim 1, as amended, is neither anticipated nor rendered obvious by the Fayyad and Lundahl combination. It is respectfully requested that the rejection of claim 1 under 35 U.S.C § 103(a) be withdrawn.

Claims 4-10 and 12-14 all depend directly or indirectly from claim 1. Thus, it is respectfully submitted that claims 4-10 and 12-14 are not anticipated nor rendered obvious for at least the reasons presented above with respect to claim 1, and it is respectfully requested that the rejection of dependent claims 4-10 and 12-14 under 35 U.S.C § 103(a) be withdrawn.

Conclusion

The Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
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